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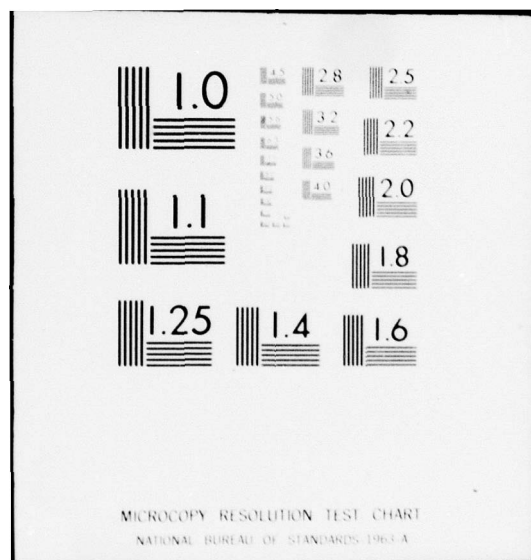
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Report SAM-TR-78-1

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AUTOMATED ENTRY OF DATA FROM THE AEROMEDICAL EVALUATION SUMMARY REPORT

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Final Report for Period June 1975-June 1976

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USAF SCHOOL OF AEROSPACE MEDICINE
Aerospace Medical Division (AFSC)
Brooks Air Force Base, Texas 78235



NOTICES

This final report was submitted by personnel of the Data Processing Branch, Biometrics Division, USAF School of Aerospace Medicine, Aerospace Medical Division, AFSC, Brooks Air Force Base, Texas, under job order 7755-20-10.

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This report has been reviewed by the Information Office (OI) and is releasable to the National Technical Information Service (NTIS). At NTIS, it will be available to the general public, including foreign nations.

This technical report has been reviewed and is approved for publication.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Aeromedical Evaluation Summary Sheets are prepared for each aircrewman referred to USAFSAM. These reports are prepared using an IBM Magcard II Selectric typewriter. The information entered on the form is recorded on magnetic cards and then transmitted to an IBM 360/65 computer with a communicating Magcard Selectric typewriter where it is prepared for entry into a repository. Corrections to the repository may also be made using the same equipment. 4		

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AUTOMATED ENTRY OF DATA FROM THE AEROMEDICAL EVALUATION SUMMARY REPORT

INTRODUCTION

Every aircrewman referred to the USAF School of Aerospace Medicine for evaluation has an Aeromedical Evaluation Summary Report prepared. Most of the information entered on this report must also be entered into a repository maintained at San Antonio Data Services Center (SADSC) on an IBM 360/65 computer.

This report describes a procedure which enables the information required for the repository to be captured in machine-readable form as the report is prepared. The machine-readable information is then transmitted to the computer from a remote terminal and prepared for use in repository updating. The repository is then periodically updated with the new information (Fig. 1).

DATA PREPARATION

The first phase of the procedure is the preparation of the Aeromedical Evaluation Summary Sheet (Fig. 2). This report form is prepared on an IBM Magcard II Selectric typewriter. As the typist enters the data on the report form, the machine records the typed information on a machine-readable magnetic card. The entries on the form are made according to the instructions in Appendix A using tabulation and carriage returns to identify the position of each entry on the form. In a similar manner, additions, deletions, and changes to the current data in the repository can be entered by preparing them according to the instructions in Appendix B and typing them on the IBM Magcard Selectric typewriter.

DATA ENTRY

In the second phase of the procedure the data recorded on the magnetic cards are transmitted from the magnetic card to a temporary APL data set at SADSC. This temporary APL data set is created by using an IBM Communicating Magnetic Card Selectric typewriter as an APL terminal for the IBM 360 computer. An APL program reads the magnetic cards from the terminal and creates the APL data set. The instructions for running the APL program are given in Appendix C. An APL data set created by the APL program is limited to 20 new patients or 200 patients who have additions, deletions, or changes. Each APL data set must contain either new entries or changes, because new entries are

identified by position on the SAM Form 114 and changes are identified by a numeric code (Appendixes A and B).

DATA VALIDATION

In phase three, the entries in the APL data set created in phase two are converted from APL characters to the corresponding EBCDIC characters and each entry validated. Validation consists of processes such as eliminating nonnumeric and special characters, suppressing space, and converting numeric values to binary integers. The character conversion and validation are performed by two FORTRAN programs which run in batch mode on the IBM 360. One of these programs processes new patient information and creates three types of records for repository updating which is performed in phase four. The other of these FORTRAN programs processes the addition, deletion, and changes created in phase one. This second program can create five different types of records for the phase four update. The major difference between the two FORTRAN programs is that the second program uses a numeric code to identify the field to be changed in the repository record.

Both programs use a subroutine named COVER to identify the data, perform the character conversion, and enter the data into the proper field. This subroutine has five arguments. The first argument is an integer containing the maximum number of characters in the receiving field (receiving field length). The second argument is the name of a half-word integer array which is to receive the characters, one per word, left justified. The third argument is an integer variable which returns the number of characters transferred from the input record to the output array (input field length). The sign of this integer variable also indicates the type of field terminator encountered. A positive value of the third argument indicates a tab character, and a negative value indicates a carriage return. The fourth argument is an integer variable that returns a status flag. This variable indicates type of field termination. A negative value indicates terminator of a c which is a reference code typed as the first character of a report. A zero value indicates a normal termination with a tab or carriage return. A positive value indicates a section code which is a sequence of asterisks (*) used to terminate sections of the form. When this value is positive, it indicates the number of asterisks found and hence the section of the form terminated.

The fifth and final argument is an integer value which controls the character validation and suppression. It may assume the values of minus one to plus four. A value of minus one causes only the digits 0 - 9 to be accepted and converted to a half-word (16 bit) integer to be returned in the first entry of argument two. A value of zero provides no validation or suppression and all characters encountered are transferred to the output field. A value of plus one causes space suppression in the output field. A plus two will suppress all

characters except the digits 0 - 9. A plus three will suppress all characters except A - Z. A plus four will accept the digits 0 - 9 and the characters A - Z. Both upper and lower case characters A - Z are accepted in the alphabetic fields. In a numeric field a lower case L will be converted to a one and an upper case O will be converted to a zero. The characters N and A are also accepted in a numeric field; however, they are not accepted in a field to be converted to a half-word integer.

Conversion from the APL character set to the EBCDIC character set is also performed by this subroutine. As each record is read from the APL data set, all characters are translated by a FORTRAN callable assembly language routine.

REPOSITORY UPDATING

Finally in the fourth phase of the procedure, the data set created in phase three is used as a transaction data set by a MARK IV program to update a repository. Each record created in phase three is identified by patient social security number, name, grade, case number, and transaction code. New records are added to the repository in ascending sequence if no existing record has the same social security number and name.

CONCLUSION

This procedure has been used for all repository updates since March 1976. Approximately 100 Aeromedical Evaluation Summary Sheets are processed each month. It is a simple, accurate, and relatively inexpensive means of capturing data in machine-readable form as a required document is being prepared. The modular construction of this procedure makes it readily adaptable to processing similar types of data.

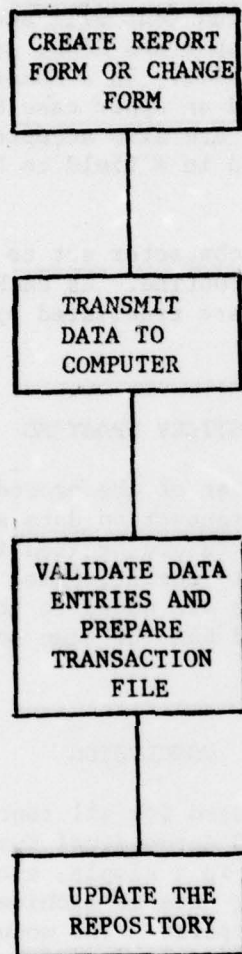


Figure 1. Flow diagram of data capture and repository update.

REFERENCE CODE	PAGE NO.	01 AEROMEDICAL EVALUATION SUMMARY SHEET							
SOCIAL SECURITY ACCT NR.		NAME (LAST, FIRST, MI)						GRADE	CASE NUMBER
DATE OF BIRTH (YEAR, MONTH, DAY)	HEIGHT	WEIGHT	SEX	RACE	MAJ COMMAND	AERO-RATING	AIRCRAFT	FLYING HOURS	SEC I CODE
11	12	13	14	15	16	17	18	19	
HOME ADDRESS (INCLUDE ZIP CODE)									
21									
MILITARY ADDRESS (INCLUDE ZIP CODE)									
22									
NAME, RELATIONSHIP AND PERMANENT ADDRESS OF TWO CIVILIANS THRU WHOM YOU MAY BE CONTACTED IN SUBSEQUENT YEARS.									
1.									
2.									
SEC II CODE	LOCATION	REFERRAL	PURPOSE	RECOMMENDATION	AEROMEDICAL DISPOSITION				
	31	32	33	34	35				
REFERRAL DIAGNOSIS									
36									
37									
SEC III CODE	DEPARTMENT AND PHYSICIAN								
	41								
DATE OF EXAM (YEAR MONTH DAY)	REVIEWING PHYSICIAN						SIGNATURE		
SEC IV CODE	USAFSAM, BROOKS AFB, TEXAS 78235								

SAM FORM 114 NOV 75 PREVIOUS EDITION IS OBSOLETE

Figure 2. Aeromedical Evaluation Summary Sheet.

APPENDIX A

INSTRUCTIONS FOR TYPING SAM FORM 114

Left Margin: 6
Right Margin: 90
Use Tab Grid

GENERAL RULES AND INFORMATION

Any time there is a block that is left blank because there is no information (as in the case of a civilian when he would not have an aero-rating, aircraft, flying hours, etc.), record an NA. The only exceptions to this would be the Recommendation Code which may be unknown or uncertain at the time the 114 is typed, the Aeromedical Disposition Code which is always left blank and the Reviewing Physician's block which will be pre-stamped.

When typing numbers, always use the number 1 rather than the letter l. Do not hyphenate words on the 114 unless the hyphen is a part of the word (as in re-evaluation). The hyphen cannot be used to merely divide a word at the end of a line.

Grade Block - This block will always contain two digits, one alpha digit immediately followed by one numeric digit. If the patient is in a service other than the Air Force, use the equivalent grade provided on the Air Force grade equivalency chart. For example, if the patient is a Commander in the Navy, we would type 05 since a Navy Commander is equivalent in grade to an Air Force Lt Col. Retired military personnel - Type appropriate rank designation in Grade Block and put RET under Major Command.

Name Block - Do not use any periods or commas. Type the last name (space) first name (space) middle initial. Example: DOE JOHN A

Home Address and Military Address Blocks - Do not use any periods, commas or any other special characters. NEVER under any circumstances use the symbol #. The home and military address blocks will be two line addresses, and they will be separated by a Tab instead of a CR. Always use the two letter state abbreviations.

Examination Location Block:
Code number for SAM is 7.
Code number for Clark is 6.

Typing last names on the 114:
Do not use any small letters.
Do not leave space.
Do not hyphenate.

EXAMPLE: MCKAY
VANARSDALE
SANTANATIRADO

APPENDIX A (Continued)

1. Type one Index Return to begin page.
2. Type c mark. Tab three times. Type 01.
3. CR two times and record Social Security #. Tab twice and record name. Tab as many times as necessary to get to the Grade block. Type grade, Tab twice and type Case #.
4. CR four times. Type appropriate information in all the blocks. Tab at least once between each item of information. (Sometimes it will be necessary to tab twice in order to reach the next block.) Type one asterisk in the Sec I Code block.
5. CR three times. Type street address. Tab as many times as necessary to get past the dividing mark for that block. Type city, state and ZIP #.
6. CR three times. Type military address the same way as home address.
7. CR two times for Next of Kin addresses. Type name. Tab to first dividing mark for the block. Type in appropriate relation code. (See Atch # 1). --TAB-- Type street address --TAB-- Type city, state and ZIP. If you do not have a street address, type NA and put city and state where it would ordinarily be placed.
8. CR as necessary to get to Sec II Code block. Type two asterisks. Continue tabbing and typing the appropriate information in each block.
9. CR four times and type Referral Diagnosis Code #, tab twice and type alpha diagnosis.
10. CR two times. Type all disease code numbers and alpha diagnoses. Type out all main words. Try not to abbreviate. Finish diagnoses with a CR. Either CR to Sec II Code block or else CR after the last Dx, put a SC and manually roll platen down to Sec III Code block.
11. Sec III Code Block: Type three asterisks. Tab twice and type first physician code. Tab once between each subsequent physician code number.
12. CR into position for the Date of Exam block. Type date of exam. CR twice and type four asterisks. CR twice and RECORD card.

EFFECTIVE 2 Feb 76:

Use the following designation on the 114 for Race:

Caucasian	C
Negroid	N
Asian (Oriental)	O
Indian (Amer)	I
Other	X

APPENDIX A (Continued)

Atch # 1

Codes for Next of Kin Block on SAM Form 114:

Wife	W
Husband	H
Father	F
Mother	M
Sister	S
Brother	B
Sister-in-law	I
Brother-in-law	
Mother-in-law	
Father-in-law	
Other	O
Unknown	U

APPENDIX B

INSTRUCTIONS FOR TYPING SAM FORM 114 CHANGES, ADDITIONS, AND DELETIONS

1. Field Identification

Each field has been identified with an identification number on the 114 Form (Fig. 2). That number will be the identifying number for any changes, additions or deletions.

2. Recording

Begin each new record with the following:

- a) One CR to begin record
- b) c mark --CR--
- c) SS# --TAB-- Name --TAB-- RANK --TAB-- CASE # --CR--

3. Fields #'s 11-19

Change or addition: Record: Field # --TAB-- Correct or new info --CR--

Example:

12 --TAB-- 72 --CR--

Delete: 12 --TAB-- NA --CR--

4. Fields #'s 21 or 22

The entire address must be recorded for either Field 21 or 22. It will be recorded without a CR between street and city.

Change or Addition:

Example:

21 --TAB-- Street address --TAB-- City State ZIP --CR--

5. Fields 31 - 35: Same as Fields 11 - 19

Field 35 Change or Addition: 35 --TAB-- # to be entered --CR--

6. Fields #'s 36 or 37

Examples:

Change: 37 --TAB-- Old Dx # --TAB-- New Dx # --TAB-- Alpha Dx --CR--

Delete: 37 --TAB-- Old Dx # --CR--

Addition: 37 --TAB-- New Dx # --TAB-- Alpha Dx --CR--

APPENDIX B (Continued)

7. Field 41

Examples

Change: 41 --TAB-- Old phys # --TAB-- New phys # --CR--

Delete: 41 --TAB-- Old phys # --CR--

Addition: 41 --TAB--TAB-- New phys # --CR--

8. Additional Information

Several changes, additions and/or deletions may be made in the same record without retyping the identifying information.

APPENDIX C

APL/MAGNETIC CARD READING PROCEDURE

1. Insert Elite 72 Type ball.
2. Turn on Typewriter and push the PLAY button (On left of console).
3. Set tabs every 6 spaces.
4. Turn on the Acoustic Coupler (On switch is at front of blue box).
5. Dial 828-6461. When the computer answers with its high pitched tone, place the receiver firmly in the cradle of the coupler with the cord toward the front.
6. When the 'S' (send) light (on the right side of the console) comes on, insert the Magnetic card labeled 'APL/MC SIGNON' in the Card Unit and press the AUTO button (on the right side of the console).
7. After the card has ejected, insert data card and push AUTO button.
8. When the Mag Card encounters the 'STOP CODE' at the end of the diagnostic section, the read operation will halt with the 'S' light on. To resume the read operation, press the AUTO button. The card will be ejected at the end of the read cycle.
9. For additional data cards repeat steps 7 and 8.
10. After the last data card has been read and ejected, insert the Mag card labeled 'APL/MC SIGNOFF', and push the AUTO button.
11. After the APL signoff, turn off the Acoustic Coupler, hang up the phone, remove the 'SIGNOFF' card, and turn the Typewriter off.

* Note: Typewriter sometimes pauses during the *
* read operation. If it is not at the end *
* the 'R' (Receive) light will be on *
* whereas at the actual stop the 'S' *
* light will be on. *